

Building your Business Case for Strategic Metadata Management

Justifying a Geographic Information Infrastructure across the Enterprise (and Beyond)

May 2000

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Should I Stay for this Presentation?

Or go have coffee. . . .

P What is metadata?

P Who cares? Why?

P What is the **value** of managing metadata (and what will that **cost**?)

P What new or different **actions** should I take if I were to take this seriously?

P What **tools & resources** are available to help?

What is Metadata?

It's not just for GIS Geeks!

It's the **information** and **documentation** required . .

*"to **locate**, **select**, **purchase**, and **access** geographic data, **determine** whether the data in a holding will be of use to them, and **use** it in the most efficient way."*

– International Standards Organization: 2. *CD 19115, Geographic information -Metadata* (11/99)

Data sets remain useable, shareable, and understandable as long as the metadata remain accessible. . . .All organizations which produce data have an obligation to produce the metadata necessary to make the data understandable, both for internal and external users of the data. It is not sufficient for these data users to have access to data sets without the information needed to understand or interpret the data.

-- ISO committee draft 15046-15: Geographic information - Part 15: Metadata (Annex C)

What does Metadata Tell Us?

Information about. . . .

P Spatial Accuracy

P Attribute Accuracy & Robustness

P Currency & Completeness

P Context and Lineage

P Access

P Integrity

P *And anything else we need to know in order to maximize the value of our information assets*

What does Metadata Tell Us?

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Information about. . . .

Spatial Accuracy

Attribute Accuracy & Robustness

Currency

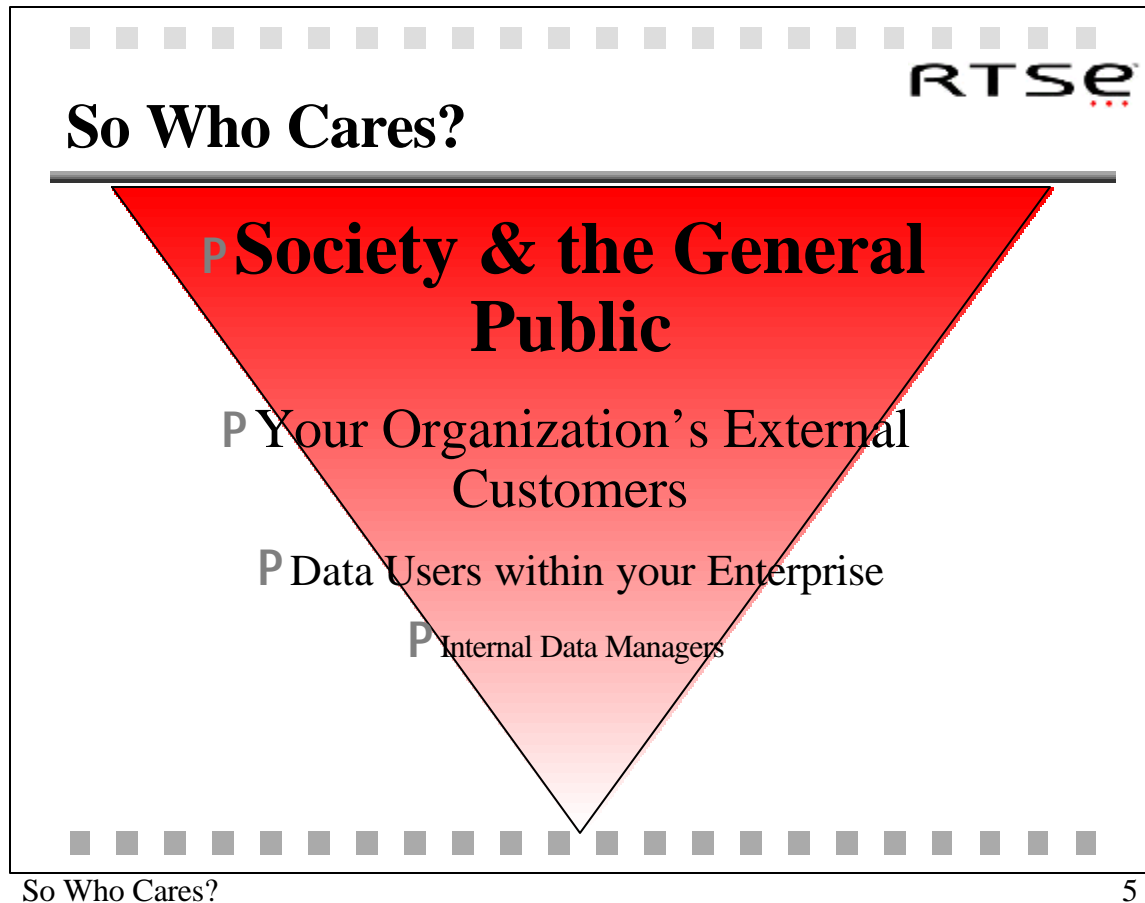
Completeness

Context and Lineage

Access

Integrity

- *And anything else we need to know in order to maximize the value of our information assets*



YOU have to define your constituencies, and TARGET your metadata management to maximize your return within each group.


YOU have to know who your "general publics" and "external customers" are, and identify benefits that accrue to them: actual or potential.

Similarly, YOU have to know your enterprise and your management environment, and leverage their needs to your benefit.



The Value of Metadata Management

Immediate and Long Term

- P Helps organize an organization's **internal investment** in spatial data, and maintain value over time,
 - P Demonstrates **broad accessibility** and commitment to provide an information service to customers,
 - P Provides **information** about an organization's data holdings to data warehouses and clearinghouses.
- 

The Cost of Metadata Management

Short Term & Long Term

- P Investment in Hardware, Software & Training
- P Commitment to Cross-functional Information Collection & Quality-control
- P Work Flow & Process Re-Engineering
- P Continuous Improvement

Costs:

- largely can be anticipated and managed:
- sizeable startup costs are incurred in the short term;
- long-term maintenance costs are small and manageable.

Benefits:

- Short-term benefits may be limited, but can be leveraged.
- Long-term returns grow and grow and grow, based on constituents (users) and management practices.

A Spatial Database Inventory

Implementation Step 1

PIdentify all source materials, prioritizing spatial data sets and related files for documentation.

Projection; Datum; Units	Unknown; NAD27; feet
Data Manager	County HWY Department
Software ID & version	AutoCad v.11; Visual FoxPro
Size	4000 kb
Last Modified	19960301
Path / Location	BOZO//D2/covs/rds

FIVE IMPLEMENTATION STEPS

#1 - **SpatialDatabase Inventory** -- put a boundary around the universe of information -- spatial and non-spatial, digital and non-digital -- that you want to document

An Organizational Inventory

Implementation Step Two

P Each metadata record contains:

- ▶ Some information which relates to the **organization** which stewards the data,
- ▶ Some information which may pertain to many **themes of data** within one project or program, and
- ▶ Other (more technical) information pertains only to the **database** you are documenting.

P Whose good will and **cooperation** will you have to rely on, in order to gather and verify all the information for your first ten metadata records?

FIVE IMPLEMENTATION STEPS

#2 - **Organizational Inventory** -- Who will you have to rely on to get the job done.

Software Selection

Implementation Step Three

P Standard tools & training are the keys to productivity, consistent and useful output.

P Which software tool(s) are available already?

P What are criteria for selection of new tools?

FIVE IMPLEMENTATION STEPS

#3 - Software Selection

Compliance with FGDC Metadata standard

Does the vendor say so?

Will the metadata output parse?

Evaluation of “Metadata Tools”

Usability

Administration

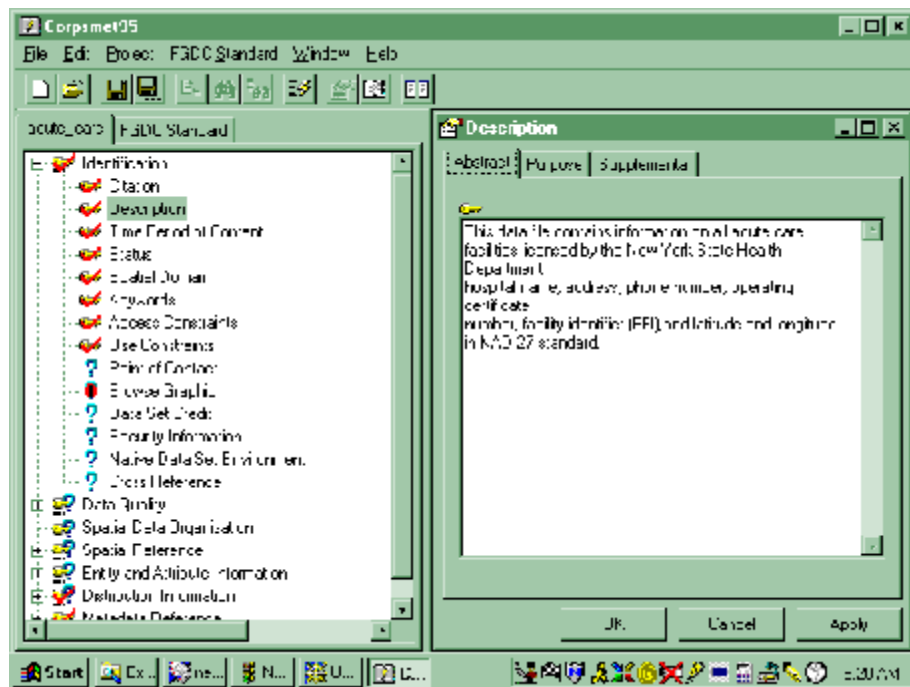
Future FGDC/ISO Updates

Metadata Exchange

Tool Reliability

See <http://badger.state.wi.us/agencies/wlib/sco/metatool/mtools.htm>

Freeware Solutions, such as:



Freeware Solutions, such as:

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Freeware Solutions, such as:

"Corpsmet 95" from the Army Corps of Engineers, available at:

ftp://www.usace.army.mil/pub/corpsmet95/corpsmet95_install.exe

Proprietary Solutions, such as:

The screenshot displays the SMMS 3.0 application window. The title bar reads 'SMMS 3.0 - [C:\Program Files\SMMS3\Samples.mxd]'. The menu bar includes File, Edit, View, Tools, and Help. The toolbar contains icons for opening files, saving, printing, and other standard functions. The main window is titled 'Washington State Highways, 1998'. It features a tabbed interface with the following tabs: General, Time Period of Content, Status, Bounding Coordinates, G Polygon, Keywords, Browse Graphics, Security, and Cross Reference. The 'General' tab is active, showing the following fields:

- Citation: Washington State Highways, 1998
- Point of Contact: Ron Olson
- Description:
 - Abstract: This data set is a linear representation of Washington State Routes, with State Route (SR) identifies and route measure attributes. Each SR is symbolized with a single line whether or not the highway.
 - Purpose: The data provide a small-scale cartographic rendition of Washington State highways. They also represent the linear reference system (LRS) used by Washington State Department of Transportation. This
 - Supplemental Information:
- Access Constraints: none
- Use Constraints: none
- Data Set Credit: GIS/Cartography Section, Washington State Department of Transportation
- Native Data Set Environment: ArcInfo coverage, version 7.1.2 for NT 4.0

At the bottom of the window, there is a row of tabs for metadata categories: Identification, Data Quality, Spatial Data Organization, Spatial Reference, Entity and Attribute, Distribution, Metadata Reference, and Associated Data. The 'Identification' tab is currently selected. A status bar at the very bottom reads 'Editing Metadata, Press Shift-F1 for help on current field.' and includes a 'NUM' button.

Proprietary Solutions, such as:

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Proprietary Solutions, such as:

The "Spatial Metadata Management System (SMMS)," available at

www.rtseuse.com

Standardize Business Rules

Implementation Step Four

P **Conventions & Procedures** for key words, naming conventions, date ranges, etc.

P Candidates for "**boilerplate**" text (disclaimers, limitations, access instructions, etc.)

P **Re-usable Components**: Contact, Distribution and Reference information


FIVE IMPLEMENTATION STEPS

#4 - Standardize Business Rules



Implement and Evaluate

Implementation Step Five

- P Carefully implement & assess a **pilot program**,
 - P Set & monitor **goals** for conversion & production which are realistic,
 - P Stick to periodic review & **update** schedules,
 - P Integrate metadata maintenance with **data stewardship**.
- 

FIVE IMPLEMENTATION STEPS

#5 - **Implement and Evaluate**

Resources

“There is no such thing as a free lunch.”

P Internal software tools and skills

P Metadata software & add-ons

- Share-ware
- Commercial and proprietary

P Digital and paper resources:

- Standards
- Templates
- Training materials, tutorials and FAQs

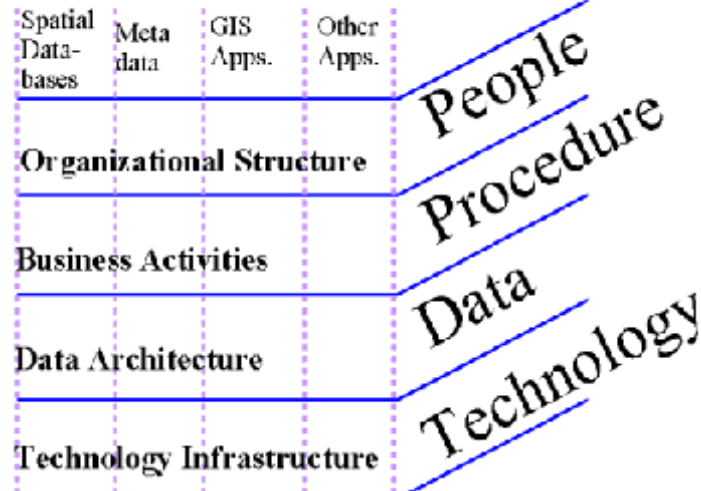
P Workshops and peers

Resources:

There are lots of documents, websites, people and events that can provide you with information, education and support.

Your Information Management Strategy

Applications, Systems & Programs



Your **information architecture** includes a matrix of issues. Spatial metadata touches all of them.

YOU have to know how metadata "fits" within all cells of the architecture matrix before your strategy can be complete.

Metadata Management – some Conclusions

- P Effective metadata management is integrated with your data maintenance life cycle,
- P The costs of *strategic metadata management* are largely front-loaded and can be controlled,
- P Longer-term costs are part of data quality control and continuous improvement programs,
- P Benefits accrue immediately; long term benefits may be internal and/or external.

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